

**Notice of Allowability**

Application No.

10/780,799

Examiner

Patrick J. Connolly

Applicant(s)

VAWTER ET AL.

Art Unit

2877

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 31 March 2006.
2. ☒ The allowed claim(s) is/are 1-39.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

The affidavit under 37 CFR 1.132 filed March 31, 2006 is sufficient to overcome the rejection of claims 1, 4, 7, 9-13, 15, 18-20, 22, 23, 25-32, 36, 38 and 39 based upon Vawter et al., *Developments in Pursuit of a Micro-optic Gyroscope*, Sandia National Laboratories Report No. SAND2003-0665, March 2003.

### ***Allowable Subject Matter***

Claims 1-39 allowed.

The following is an examiner's statement of reasons for allowance:

As to claim 1, the prior art of record, taken alone or in combination, fails to disclose or render obvious an integrated optic gyroscope including *in combination*: a bidirectional laser source formed on a compound semiconductor substrate; a pair of waveguide phase modulators formed on the substrate to provide modulation for each lasing output of the bidirectional laser source; a plurality of passive waveguides formed on the substrate to direct each lasing output to an edge of the substrate after passing through the phase modulators; a passive ring resonator adapted to receive each lasing output from the edge of the substrate, to propagate each output around the resonator in a different direction, and to direct a portion of each output out of the resonator after propagating around the resonator, in combination with the rest of the limitations of claim 1.

As to claim 18, the prior art of record, taken alone or in combination, fails to disclose or render obvious an integrated optic gyroscope including: a passive ring resonator formed on a first substrate including: a pair of output waveguides coupled to a coiled waveguide to receive a

portion of lasing light from said coiled waveguide and to convey the portion of the lasing light to the edge of the first substrate after propagating around said coiled waveguide; and a photonic integrated circuit on a second substrate including: a bidirectional distributed feedback laser; and a pair of waveguide phase modulators coupled to each end of the DGB laser, in combination with the rest of the limitations of claim 18.

As to claim 36, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for forming an integrated optic gyroscope including: forming a plurality of active optical elements from compound semiconductor lasers including a bidirectional laser source and a pair of waveguide photodetectors; forming a pair of optical waveguide phase modulators optically coupled to the bidirectional laser source and a plurality of passive optical waveguides, with the passive optical waveguides connecting the pair of the optical waveguide phase modulators and the pair of waveguide photodetectors to an edge of the compound semiconductor substrate; and connecting a passive ring resonator to the edge of the compound semiconductor substrate, with the passive ring resonator being optically coupled to the plurality of passive optical waveguides to receive a phase-modulated lasing output from the laser source and each optical waveguide phase modulator, and to direct a portion of the phase-modulated lasing output to each waveguide photodetector after propagating the phase-modulated lasing output around the passive ring resonator, in combination with the rest of the limitations of claim 36.

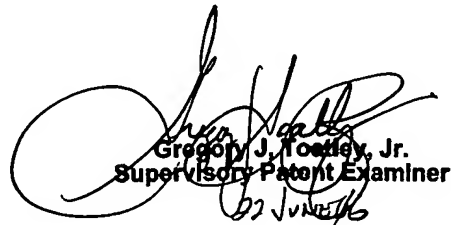
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Connolly whose telephone number is 571.272.2412. The examiner can normally be reached on 9:00 am - 7:00 pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571.272.2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
02 JUNE 06